

PCT

## NOTIFICATION OF ELECTION

(PCT Rule 61.2)

From the INTERNATIONAL BUREAU

To:

Commissioner  
US Department of Commerce  
United States Patent and Trademark  
Office, PCT  
2011 South Clark Place Room  
CP2/5C24  
Arlington, VA 22202  
ETATS-UNIS D'AMERIQUE

in its capacity as elected Office

Date of mailing (day/month/year) 07 June 2001 (07.06.01)	
International application No. PCT/IB00/01323	Applicant's or agent's file reference 102729/PRS
International filing date (day/month/year) 05 September 2000 (05.09.00)	Priority date (day/month/year) 06 September 1999 (06.09.99)
Applicant AHLNUND, Hans et al	

1. The designated Office is hereby notified of its election made:

☒ in the demand filed with the International Preliminary Examining Authority on:  
04 April 2001 (04.04.01)

☐ in a notice effecting later election filed with the International Bureau on:

2. The election ☒ was  
☐ was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WIPO  
34, chemin des Colombettes  
1211 Geneva 20, Switzerland

Facsimile No.: (41-22) 740.14.35

Authorized officer

Zakaria EL KHODARY

Telephone No.: (41-22) 338.83.38

**THIS PAGE BLANK (USPTO)**

410

410

**PCT**

**NOTIFICATION OF THE RECORDING  
 OF A CHANGE**

(PCT Rule 92bis.1 and  
 Administrative Instructions, Section 422)

From the INTERNATIONAL BUREAU

To:

SLINGSBY, Philip, Roy  
 Page White & Farrer  
 54 Doughty Street  
 London WC1N 2LS  
 ROYAUME-UNI

Date of mailing (day/month/year)  
 17 January 2002 (17.01.02)

Applicant's or agent's file reference  
 102729/PRS

**IMPORTANT NOTIFICATION**

International application No.  
 PCT/IB00/01323

International filing date (day/month/year)  
 05 September 2000 (05.09.00)

1. The following indications appeared on record concerning:

☒ the applicant ☐ the inventor ☐ the agent ☐ the common representative

Name and Address

NOKIA NETWORKS OY  
 Keilalahdentie 4  
 FIN-01250 Espoo  
 Finland

State of Nationality

FI

State of Residence

FI

Telephone No.

Facsimile No.

Teleprinter No.

2. The International Bureau hereby notifies the applicant that the following change has been recorded concerning:

☐ the person ☒ the name ☐ the address ☐ the nationality ☐ the residence

Name and Address

NOKIA CORPORATION  
 Keilalahdentie 4  
 FIN-01250 Espoo  
 Finland

State of Nationality

FI

State of Residence

FI

Telephone No.

Facsimile No.

Teleprinter No.

3. Further observations, if necessary:

4. A copy of this notification has been sent to:

☒ the receiving Office ☐ the designated Offices concerned  
☐ the International Searching Authority ☒ the elected Offices concerned  
☒ the International Preliminary Examining Authority ☐ other:

The International Bureau of WIPO  
 34, chemin des Colombettes  
 1211 Geneva 20, Switzerland

Authorized officer

Elisabeth KÖNIG

Facsimile No.: (41-22) 740.14.35

Telephone No.: (41-22) 338.83.38

**THIS PAGE BLANK (USPTO)**

## PATENT COOPERATION TREATY

PCT


REC'D 07 JAN 2002

WIPO

PCT

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 102729/PRS		<b>FOR FURTHER ACTION</b> See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/IB00/01323	International filing date (day/month/year) 05/09/2000	Priority date (day/month/year) 06/09/1999	
International Patent Classification (IPC) or national classification and IPC H04Q7/38		<b>RECEIVED</b> <b>MAR 03 2003</b>	
Applicant NOKIA NETWORKS OY et al. <i>Corporation</i>		Technology Center 2600	
<p>1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 6 sheets, including this cover sheet.</p> <p><input checked="" type="checkbox"/> This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).</p> <p>These annexes consist of a total of 2 sheets.</p>			
<p>3. This report contains indications relating to the following items:</p> <ul style="list-style-type: none"><li>I <input checked="" type="checkbox"/> Basis of the report</li><li>II <input type="checkbox"/> Priority</li><li>III <input type="checkbox"/> Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</li><li>IV <input type="checkbox"/> Lack of unity of invention</li><li>V <input checked="" type="checkbox"/> Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</li><li>VI <input type="checkbox"/> Certain documents cited</li><li>VII <input checked="" type="checkbox"/> Certain defects in the international application</li><li>VIII <input checked="" type="checkbox"/> Certain observations on the international application</li></ul>			
Date of submission of the demand  04/04/2001		Date of completion of this report  03.01.2002	
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epnu d Fax: +49 89 2399 - 4465		Authorized officer  Harrysson, A  Telephone No. +49 89 2399 7529	

# INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/IB00/01323

## I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):
- Description, pages:**

1,2,4-15	as originally filed	
3,3a	with telefax of	30/10/2001

**Claims, No.:**

1-16 as originally filed

**Drawings, sheets:**

1/3-3/3 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

# INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/IB00/01323

- ☐ the description, pages:  
☐ the claims, Nos.:  
☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

*(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)*

6. Additional observations, if necessary:

## V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

### 1. Statement

Novelty (N)	Yes:	Claims	
	No:	Claims	1-4,11,15
Inventive step (IS)	Yes:	Claims	
	No:	Claims	1-11,16
Industrial applicability (IA)	Yes:	Claims	1-16
	No:	Claims	

2. Citations and explanations  
see separate sheet

## VII. Certain defects in the international application

The following defects in the form or contents of the international application have been noted:  
see separate sheet

## VIII. Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:  
see separate sheet

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT - SEPARATE SHEET**

---

International application No. PCT/IB00/01323

**Concerning point VIII (observations on clarity)**

In claim 1 it is not clear what is meant by "...determining level of interference with signals..." as also the measuring of a signal strength level, which is already disclosed in a prior art document, see point V below, can be interpreted in such a wording. According to PCT Guidelines IV-III-4.2 a more specific meaning or explicit definition is required to make the claim clear in the sense of Article 6 PCT.

**Concerning point V (reasoned statement under Article 35(2) PCT)**

1) The following documents are cited in the search report:

**D1: WO 97 15169 A** (ERICSSON TELEFON AB L M ;ERICSSON GE MOBILE INC (US)) 24 April 1997 (1997-04-24)

**D2: US-A-5 440 561** (WERRONEN ALTON P) 8 August 1995 (1995-08-08)

**D3: MOULY M ET AL: 'The GSM system for Mobile Communications' 1992 ,**  
FR,LASSAY-LES-CHATEAUX, EUROPE MEDIA, PAGE(S) 329-341  
**XP002131901**

**D4: MEHROTRA A: 'GSM system engineering' 1997 , ARTECH HOUSE**  
PUBLISHERS , PADE(S) 223-227 , BOSTON US **XP002131902**

- 2) With respect to **claim 1** and based on the above given interpretation, document **D1** discloses (any references in parentheses applying to this document) a method for operating a radio telecommunications system comprising a mobile station and one or more cell site units capable of communicating by radio with the mobile station on at least two communication channels, comprising the steps of:
- a) the mobile station receiving signals on each of the communication channels (see e.g. page 3 at lines 8-10, where it is disclosed that signals are measured, thus received by the mobile station);
  - b) the mobile station determining an estimate of the level of interference with signals on each of the communication channels (see e.g. page 9 at lines 9-10).

In view of the clarity objection above the document **D1** thus discloses **all** features of **claim 1** and the subject-matter of said claim is therefore **not novel** (Article 33(1) and (2) PCT).

- 3) Similar comments to the above apply also to independent **claim 11**, which defines



a mobile station for operation in a telecommunications system as defined in claim 1 performing the method defined in claim 1. Claim 11 is thus **not clear** in the sense of Article 6 PCT.

- 4) With respect to independent **claim 16**, document D1 discloses a method for operating a radio telecommunications system comprising a mobile station and one or more cell site units capable of communicating by radio with the mobile station on at least two communication channels, comprising the steps of:
- a) the mobile station receiving signals on each of the communication channels (see page 3 at lines 8-10);

Present claim 1 **differs** from document D1 only in that said claim additionally defines:

- b) the mobile station storing an indication of the timing difference between signals on the communication channels;
- c) the mobile station interrupting said receiving in order to receive signals on another of the communication channels at time dependent on the stored indication.

The subject-matter distinguishing claim 1 of the present application from the subject-matter of document D1 can **not** be considered as **involving an inventive step** (Articles 33(1), (3) PCT) since it is a well known problem in the field of mobile communications that different base stations might have timing differences. It is thus obvious to a skilled person to, in order to receive signals properly on each communication channel, consider the timing difference. Thus the skilled person starting from D1, wanting to overcome the timing problem would, without the need of inventive step arrive at the invention as defined by claim 16.

The subject-matter of **claim 16** is novel (Article 33(1), (2) PCT), but does **not involve an inventive step** (Article 33(1), (3) PCT).

- 5) The dependent **claims 2-8, 15** appear to add nothing of inventive significance to those claims to which they are appended.

Particularly, the transmitting of information to the mobile as in **claims 2-4 and 15**

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT - SEPARATE SHEET**

---

International application No. PCT/IB00/01323

is seen in document **D1** at page 9 at lines 9-10 and **D2** at page 333, lines 25-26. The transmitting of measurement reports as in **claim 5** is seen in **D2** on page 336 at lines 5-9.

Using handover controller in the way defined in **claims 6-8** is considered to fall under common knowledge by the skilled person. Finally the subject matter of **claims 9, 10** correspond to features in claim 16, see section 4 above.

- 6) Dependent **claims 12-14** relate to further implementing details of the subject-matter defined by claim 11. These claims meet the requirements of Article 33(1)-(3) PCT with regard to novelty and inventive step.

**Concerning point VII (defects in form or content)**

- 1) The independent claims should have been drafted in the proper two-part form recommended by Rule 6.3(b) PCT, having a preamble that correctly reflects the nearest pre-published art, presumably that represented by document D1.
- 2) The attention of the applicant is drawn to the fact that the application should have, for reasons of conciseness, included only the **minimum** necessary number of independent claims in any category.
- 3) All the claims should have included reference signs in brackets where features shown in the drawings are referred to, Rule 6.2(b) PCT. This applies to both the preamble and characterising portion, PCT Guidelines IV-III-4.11.

In a system such as GSM, the frame structure of the TDMA transmission protocol provides a sufficient period between transmissions that a mobile station is able to retune to a different frequency to measure the field strength of the principal carrier frequency of another cell on that frequency. In other systems a mobile station may be able to communicate with more than one base station simultaneously. Each base station transmits on its principal carrier frequency at maximum power so that the mobile station is able to make a baseline comparison of the field strengths of different adjacent cells. If a base station serves more than one cell then it uses a different principal frequency for each of those cells.

This method has a number of problems. It only permits a relative measure of the field strength of an adjacent cell to be determined; the relative measure could be influenced by substantial co-channel interference on the principal carrier frequency, making the frequency unsuitable for handover. The field strength comparison only gives an indication of the strengths of the principal carrier frequencies of different cells and no information about the other carrier frequencies in those cells. It may happen that when a mobile station is handed over to an adjacent cell whose principal carrier frequency has been determined to have the strongest monitored field strength, at another carrier frequency there is so much co-channel interference that the mobile station is unable to communicate; therefore if such a handover were made the call would be dropped. Therefore, when a handover is taking place a BSC must hold available the previously allocated time slot in the cell previously serving the mobile station until the handover to the new cell is confirmed as successful. Then, if the level of interference is so high that the handover would be unsuccessful the mobile station can be handed back to the previous serving cell. This arrangement reduces network capacity because it requires two slots to be held open during a hand over.

WO 97/15169 describes an arrangement where signal strength measurements are made by the mobile station, the signal strength measurements are delayed

## 3a

when the mobile is transmitting and receiving on a channel and then more frequent signal strength measurements are made when there is no communication. An alternative arrangement described in this document describes the mobile station "stealing" one or more time slots to perform the signal strength measurements by ignoring its task of receiving and/or transmitting information.

There is therefore a need for a way to determine more accurately the quality of service that can be expected on a new carrier frequency to which a mobile station

# PCT

## INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference <b>102729/PRS</b>	<b>FOR FURTHER ACTION</b> see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.	
International application No. <b>PCT/IB 00/ 01323</b>	International filing date (day/month/year) <b>05/09/2000</b>	(Earliest) Priority Date (day/month/year) <b>06/09/1999</b>
Applicant  <b>NOKIA NETWORKS OY et al.</b>		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 3 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

**1. Basis of the report**

a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

b. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international search was carried out on the basis of the sequence listing :

☐ contained in the international application in written form.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority in written form.

☐ furnished subsequently to this Authority in computer readable form.

☐ the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

☐ the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2. ☐ **Certain claims were found unsearchable** (See Box I).

3. ☐ **Unity of invention is lacking** (see Box II).

4. With regard to the **title**,

☐ the text is approved as submitted by the applicant.

☒ the text has been established by this Authority to read as follows:

**METHOD FOR QUALITY MEASUREMENT IN A MOBILE TELECOMMUNICATIONS SYSTEM**

5. With regard to the **abstract**,

☒ the text is approved as submitted by the applicant.

☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the **drawings** to be published with the abstract is Figure No.

☒ as suggested by the applicant.

☐ because the applicant failed to suggest a figure.

☐ because this figure better characterizes the invention.

2

☐ None of the figures.

**THIS PAGE BLANK (USPTO)**

## INTERNATIONAL SEARCH REPORT

International Application No

PCT/IB 00/01323

A. CLASSIFICATION OF SUBJECT MATTER  
IPC 7 H04Q7/38

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 H04Q

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ, INSPEC

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 97 15169 A (ERICSSON TELEFON AB L M ;ERICSSON GE MOBILE INC (US)) 24 April 1997 (1997-04-24)	1-8, 11-15
A	page 9, line 4 -page 13, line 16 ---	9,10,16
X	MOULY M ET AL: "The GSM system for Mobile Communications" 1992, FR,LASSAY-LES-CHATEAUX, EUROPE MEDIA, PAGE(S) 329-341 XP002131901 page 329 -page 341 ---	1-8, 11-15
X	MEHROTRA A: "GSM system engineering" 1997, ARTECH HOUSE PUBLISHERS, PADE(S) 223-227, BOSTON US XP002131902 paragraphs '6.6.1!', '6.6.1.1!', --- -/--	11-15

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

\* Special categories of cited documents:

- \*A\* document defining the general state of the art which is not considered to be of particular relevance
- \*E\* earlier document but published on or after the international filing date
- \*L\* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- \*O\* document referring to an oral disclosure, use, exhibition or other means
- \*P\* document published prior to the international filing date but later than the priority date claimed

\*T\* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

\*X\* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

\*Y\* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

\* & \* document member of the same patent family

Date of the actual completion of the international search

20 November 2000

Date of mailing of the international search report

27/11/2000

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2  
NL - 2280 HV Rijswijk  
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,  
Fax: (+31-70) 340-3016

Authorized officer

Kokkoraki, A

**PAGE BLANK (USPTO)**



## INTERNATIONAL SEARCH REPORT

International Application No  
PCT/IB 00/01323

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5 440 561 A (WERRONEN ALTON P) 8 August 1995 (1995-08-08) column 3, line 57 -column 8, line 51 -----	16

**THIS PAGE BLANK (USPTO)**

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/IB 00/01323

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 9715169 A	24-04-1997	US 6018661 A	25-01-2000
		AU 715619 B	03-02-2000
		AU 7453996 A	07-05-1997
		BR 9611081 A	13-07-1999
		CA 2235141 A	24-04-1997
		CN 1203729 A	30-12-1998
		DE 19681609 T	08-10-1998
		GB 2321370 A,B	22-07-1998
		US 6044270 A	28-03-2000
<hr/>			
US 5440561 A	08-08-1995	NONE	
<hr/>			

**THIS PAGE BLANK (USPTO)**